

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A hydrogen permeable membrane for selectively allowing hydrogen to permeate therethrough, comprising:

a metal base layer containing vanadium (V);

a metal coating layer containing palladium (Pd); and

an intermediate layer that is formed directly on the metal base layer between the metal base layer and the metal coating layer and is made of a metal having a higher melting point than the metal base layer and the metal coating layer and possessing hydrogen permeability.

2. (Original) The hydrogen permeable membrane according to claim 1, wherein the metal constituting the intermediate layer is composed of a single metal element.

3. (Original) The hydrogen permeable membrane according to claim 2, wherein the metal element is tantalum (Ta) or niobium (Nb).

4. (Original) The hydrogen permeable membrane according to claim 1, wherein the metal constituting the intermediate layer is an alloy.

5. (Original) The hydrogen permeable membrane according to claim 4, wherein the intermediate layer is made of an alloy is composed of a base metal having a higher melting point than the metal base layer and the metal coating layer and a additive metal.

6. (Original) The hydrogen permeable membrane according to claim 5, wherein the base metal is metal of group V.

7. (Previously Presented) The hydrogen permeable membrane according to claim 5, wherein the additive metal is vanadium (V) or palladium (Pd).

8. (Previously Presented) The hydrogen permeable membrane according to claim 5, wherein the intermediate layer comprises a first intermediate layer that is in contact with the metal base layer and a second intermediate layer that is in contact with the metal coating layer, wherein the first intermediate layer comprises vanadium (V) as the additive metal, and wherein the second intermediate layer comprises palladium (Pd) as the additive metal.

9. (Previously Presented) The hydrogen permeable membrane according to claim 5, wherein the additive metal contains at least one metal selected from cobalt (Co), nickel (Ni), copper (Cu), molybdenum (Mo), and titanium (Ti).

10. (Previously Presented) The hydrogen permeable membrane according to claim 5, wherein the additive metal contains at least one metal selected from silver (Ag), gadolinium (Gd), yttrium (Y), and platinum (Pt).

11. (Previously Presented) The hydrogen permeable membrane according to claim 5, wherein the intermediate layer comprises a first intermediate layer that is in contact with the metal base layer and a second intermediate layer that is in contact with the metal coating layer, wherein the first intermediate layer comprises, as the additive metal, at least one metal selected from cobalt (Co), nickel (Ni), copper (Cu), manganese (Mn), and titanium (Ti), and wherein the second intermediate layer comprises, as the additive metal, at least one metal selected from silver (Ag), gadolinium (Gd), yttrium (Y), and platinum (Pt).

12. (Previously Presented) A fuel cell comprising:

an electrolyte membrane comprising an electrolyte layer possessing proton conductivity and a hydrogen permeable membrane formed on one face of the electrolyte layer;

an oxidative gas supply portion that supplies an oxidative gas containing oxygen to one face of the electrolyte membrane; and

a fuel gas supply portion that supplies a fuel gas containing hydrogen to the other face of the electrolyte membrane,

wherein the hydrogen permeable membrane is the hydrogen permeable membrane according to claim 1.

13. (Previously Presented) A hydrogen extracting apparatus for extracting hydrogen from a hydrogen-containing gas containing hydrogen, comprising:

the hydrogen permeable membrane according to claim 1;

a hydrogen-containing gas flow passage which is formed on a first face of the hydrogen permeable membrane and through which the hydrogen-containing gas passes; and

an extracted hydrogen flow passage which is formed on a second face of the hydrogen permeable membrane and through which hydrogen that has permeated through the hydrogen permeable membrane and been extracted from the hydrogen-containing gas passes.

14. (Currently Amended) A method of manufacturing a hydrogen permeable membrane for selectively allowing hydrogen to permeate therethrough, comprising:

preparing a metal base layer containing vanadium (V);

forming an intermediate layer made of an alloy directly on the metal base layer; and

forming a metal coating layer containing palladium (Pd) on the intermediate layer,

wherein the alloy has a higher melting point than the metal base layer and the metal coating layer and possesses hydrogen permeability.

15. (New) The hydrogen permeable membrane of claim 1, wherein the metal base layer is non-porous.

16. (New) A hydrogen permeable membrane for selectively allowing hydrogen to permeate therethrough, comprising

a metal base layer containing vanadium (V) and having a first face and a second face;

a first face intermediate layer that is formed directly on the first face,

a second face intermediate layer that is formed directly on the second face; and

a first face metal coating layer containing palladium (Pd) formed on the first face intermediate layer and a second face metal coating layer containing palladium (Pd) formed on the second face intermediate layer;

wherein the first face intermediate layer is made of a metal having a higher melting point than the metal base layer and the first face metal coating layer and possessing hydrogen permeability and wherein the second face intermediate layer is made of a metal having a higher melting point than the metal base layer and the second face metal coating layer and possessing hydrogen permeability.